



# Utility-Scale Solar Policy Approaches & Best Practices

**Beyond Solar Ordinances**  
Michael Zehner and Luke Peters, The Berkley Group

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# ABOUT THE BERKLEY GROUP

- Local Government Consultant, Based in Virginia
- Focus of Services
- Involvement with Utility-Scale Solar Facilities

Michael Zehner, Director of Planning and Community Development

Kate Jones, Principal Planner

Linds Edwards, Planner I

Luke Peters, Planner II



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APPA  
American Planning Association  
Planning Advisory Service  
Creating Great Communities for All

## PAS MEMO

### Planning for Utility-Scale Solar Energy Facilities

By Darren Coffey, AICP

Solar photovoltaics (PV) are the fastest-growing energy source in the world due to the decreasing cost per kilowatt-hour—60 percent to date since 2010, according to the U.S. Department of Energy (U.S. DOE n.d.)—and the comparative speed in constructing a facility. Solar currently generates 0.4 percent of global electricity, but some University of Oxford researchers estimate its share could increase to 20 percent by 2027 (Hawken 2017). Utility-scale solar installations are the most cost-effective solar PV option (Hawken 2017).

Transitioning from coal plants to solar significantly decreases carbon dioxide emissions and eliminates sulfur, nitrous oxides, and mercury emissions. As the U.S. Department of Energy states, "As the cleanest domestic energy source available, solar supports broader national priorities, including national security, economic growth, climate change mitigation, and job creation" (U.S. DOE n.d.). As a result, there is growing demand for solar energy from companies (e.g., the "RE100," 100 global corporations committed to sourcing 100 percent renewable electricity by 2050) and governments (e.g., the Virginia Renewable Energy Act).

Federal and state incentives, such as the Investment Tax Credit, have spurred industry's efforts. This has created a boom in solar development, but many are ill-equipped to handle the unique land-use implications of utility-scale solar. Local governments need to update zoning regulations, address siting and siting regulations, and address other issues.

As a land-use planner, you have several tools available to you. Zoning ordinances do not always address solar development, and transportation and transit planning can be used to address solar facilities.



Figure 1. Utility-scale solar facilities are large-scale uses that can have significant land-use impacts on communities. Photo by Flickr user U.S. Department of Energy/Michael Faria.



**SOLAR@SCALE**

A Local Government Guidebook  
for Improving Large-Scale  
Solar Development Outcomes



# POLICY APPROACHES & BEST PRACTICES

- Importance of Comprehensive Plan Policies
  - Informs development of regulations
  - Informs action on 2232 review
  - Informs action on use permit
  - Informs siting agreement

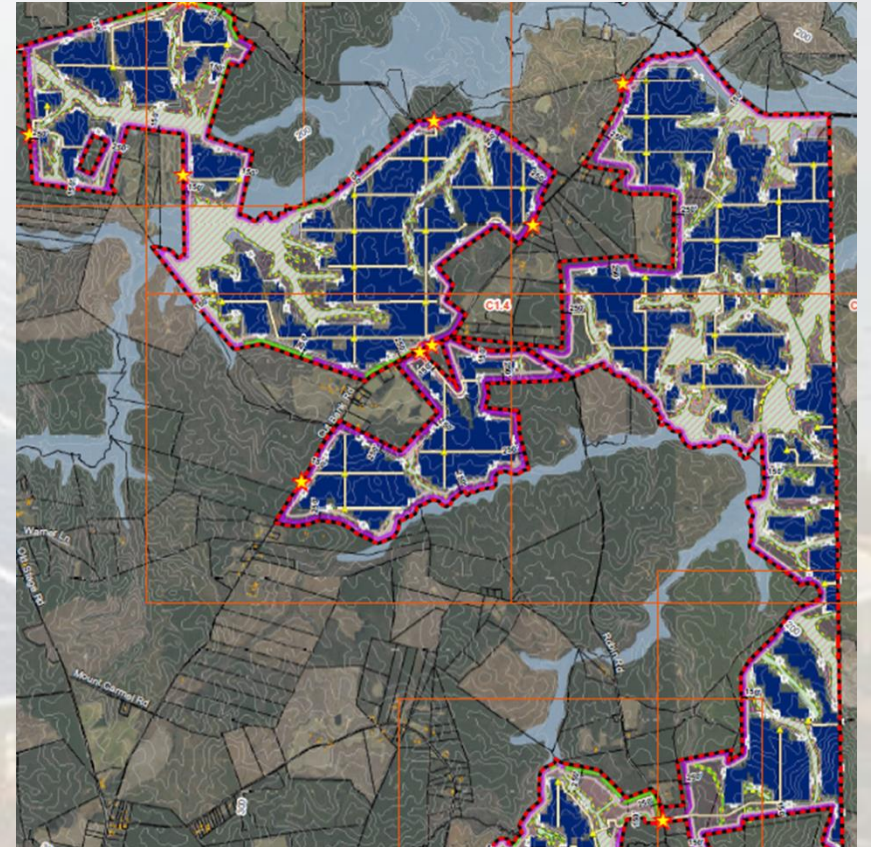


# POLICY APPROACHES & BEST PRACTICES

- Appropriateness and community input regarding facilities;
- Design, siting/location, and size and scale considerations;
- Acceptable and unacceptable impacts to recreational, natural, cultural, and historical resources;
- The relationship between these uses and agricultural uses and/or areas suitable for agriculture, as well as other community development goals;
- Desired and expected economic outcomes; and
- Potential financial, infrastructure, service, and social benefits to the community.

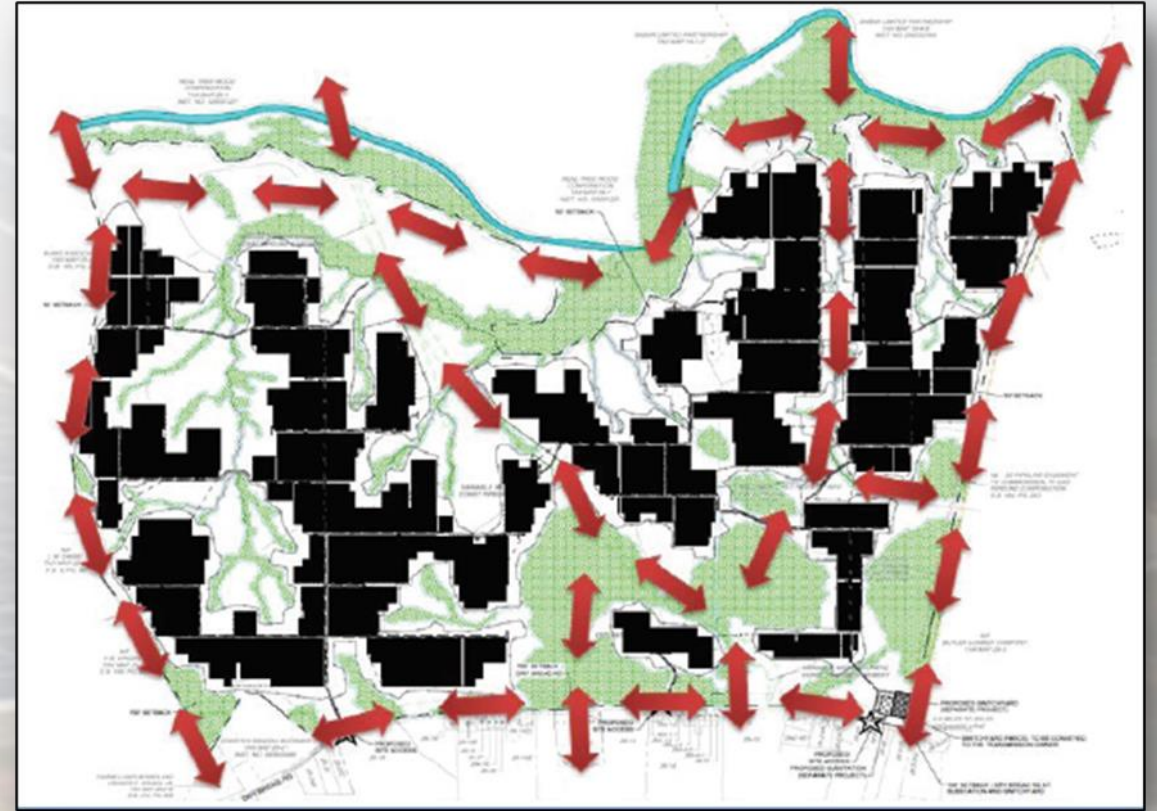
## Use Allowed, Scale, and Location

- How is the use defined?
- How large can it be?
  - Maximum project area, panel coverage, rated capacity
- Where can it be located?
  - Minimum distances from municipal boundaries, other facilities, identified resources
  - Density of facilities, county-wide or within a defined area
  - distances to transmission infrastructure



# Infrastructure, Environmental, and Visual Concerns

- Impacts to roadways; traffic safety
- Reduction of wildlife mobility
- Alteration of existing topography and terraforming
- Impacts to soil conditions
- Erosion and sedimentation, impacts to water quality
- Removal of existing forested and agricultural areas
- Potential for contamination



# Use and Visual Impacts

- Rural character
- Relationship to other uses
- Scenic viewsheds



# Agriculture Impacts

- Soil compaction
- Removal of topsoil
- Occupy large areas of land for up to 40 years
- May have impact on future reversion to agricultural uses
- Alteration of site topography may impact stormwater flow and water infiltration
- Options for Agrivoltaics





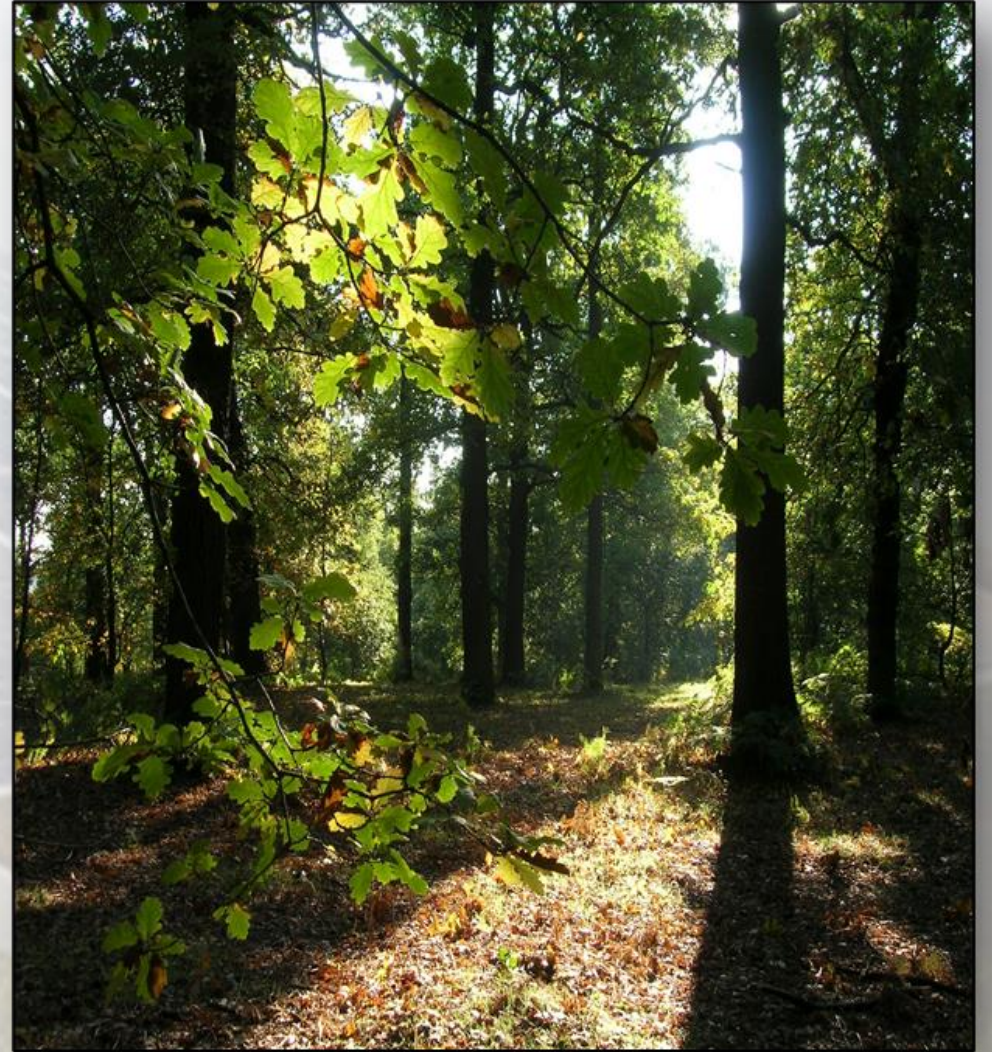
# Stormwater Management

- Panels create semi-permeable cover
- Soil compaction created infiltration coefficients similar to concrete
- Stormwater and sediment basins
- Retaining existing vegetation
- Enhancing setbacks from wetlands
- Restrict total development until site/soil stabilization
- Native and pollinator-friendly plantings



# Decommissioning

- Facility lifespan
- Disposal impacts and recycling
- Requirements for applicants:
  - Decommissioning plan
  - Cost estimates
  - Bond or security



# 2232 Review & Use Permit Best Practices

- Establish Procedures and Minimum Application Content
  - **Use Permits**
    - 2232 Review
    - Consideration of Use Permit



**...Siting Agreements**



# Mitigation Actions That May Be Better Served by Siting Agreement:

- Monetary compensation tied to potential impacts, infrastructure needs, or overarching community goals;
- Conservation of agricultural, forested, or wetlands (like self-imposed carbon credits or PDR);
- Unique conservation actions or other mitigation not tied directly to on-site land use;
- Revenue guarantees or balancing cash flow against changing taxes/depreciation schedule

# Questions & Discussion

**Michael Zehner, AICP, ENV-SP**  
Director of Planning and Community  
Development  
Michael.Zehner@bgllc.net  
404-643-7930

**Kate Jones, PLA, ASLA**  
Principal Planner  
Kate.Jones@bgllc.net  
252-573-9326

**Linds Edwards, ENV-SP**  
Planner I  
Linds.Edwards@bgllc.net  
941-993-9812

**Luke Peters, ENV-SP**  
Planner II  
Luke.Peters@bgllc.net  
804-292-8004